

Claims

1. A method for modifying a database file (31) organized in segments (32) and stored on a storage medium (12) of limited rewritability, the method containing the steps of:
 - reserving, within the database file, at least one area (42, 43, 44) of predetermined size and position dedicated to writing thereto data records (D1...D8) of at least one type, respectively;and characterized by:
 - indicating within the database file, as a last written segment (S2) that segment within the area to which data records were last written;
 - ensuring distributed write in that, whenever a data record of a specific type is to be written to the database, the writing uses, within the area dedicated to the specific type, the next available segments after the last written segment.
2. The method of claim 1, used for modifying a data record (D1...D8) of a specific type in the database file (31), wherein the database file contains an area dedicated to the specific type, and the method contains the steps of:
 - reading, from the area, the data record;
 - modifying the read data record;
 - obtaining a first write address information indicating a segment (S2) within the area to which a data record of the specific type was last written;
 - forwarding, as part of ensuring distributed write, the first write address information so that it indicates a next segment (S3) within the area which contains unused space;

- writing the modified data record to segments starting at the segment as indicated by the first write address information.
3. The method of claim 2, wherein the data record is a payload data record (73), the specific type is a "payload" type, the area is a payload area (44), the database file additionally has a control area (42), and wherein the method additionally contains the steps of:
- in case that an address information about the payload data record is contained in a control block (53) within the control area, reading, from the control area, the control block;
 - updating the address information in the control block to reflect the first write address;
 - obtaining a second write address information indicating the segment within the control area to which a control block was last written;
 - forwarding, as part of ensuring distributed write, the second write address information so that it indicates a next segment within the control area which contains unused space;
 - writing the updated control block to the segment as indicated by the second write address information.
4. The method of claim 1, used for deleting a payload data record (73) from the database file (31), wherein the database file contains a control area (42), and the method contains the steps of:
- reading, from the control area, control blocks (53) containing information associated to the payload data record to be deleted;

- marking, in the read control blocks, the payload data record to be deleted as deleted, thereby obtaining a modified control block;
 - obtaining a write address information indicating the segment within the control area to which a control block was last written;
 - forwarding, as part of ensuring distributed write, the write address information so that it indicates a next segment within the control area which contains unused space;
 - writing the modified control block to the segment as indicated by the forwarded write address information.
5. The method of any previous claim, wherein the step of ensuring distributed write contains substeps of
- incrementing the write address information until it indicates a next segment after the last written segment (S2, S4) which contains unused space;
 - resetting the write address information to the start of the area in case the incrementing has caused the write address information to indicate a segment beyond the end of the area.
6. The method of any previous claim, wherein the size of the segments corresponds to an integer multiple of the size of sectors or ECC blocks as defined in a physical format on the storage medium (12).
7. The method of claim 6, wherein the segments are allocated on the storage medium to be sector or ECC block aligned.

8. The method of any previous claim, wherein the indicating is realized by attaching to a data record to be written a version count value which is incremented and taken modulo a predefined upper bound upon each writing, the version count getting written to the database file as part of the data record being written thereto.
9. The method of any previous claim, wherein the size of the at least one area (42,43,44) is chosen such that the average wear of the segments is equal.
10. A method for serving concurrent search operations (22...26) accessing a database file containing a number (z) of documents, the method containing the steps of:
 - incrementing, upon the launch of a new search operation to test a specific criterion on the documents in the database, an active search counter (27, 28);
 - launching (Start), in case the active search counter has a value indicating that one or more search operations are active and a document retrieve process (21) is not yet running, the document retrieve process which consecutively and cyclically retrieves (29) the documents contained in the database and provides them to any active search operations;
 - memorizing, in the launched new search operation receiving documents from the document retrieve process, as a first document an identifier of the document received first after launch, and applying the specific criterion on the received documents;
 - terminating, in case the search operation receives the first document a second time, the search

operation and decrementing the active search counter;

- terminating (End), in case the active search counter has a value indicating that no more search operations are active, the document retrieve process (21).
11. The method of claim 10, wherein the search operations originate from different sources.
12. A data carrier having stored thereon a database file (31) containing records (D1...D8), characterized in that each record contains one distinct version number information monotonically related to the time when the record was written to the data carrier.
13. The data carrier of claim 12, additionally characterized in that only that record is predefined to be considered valid, for which the subsequent record does not bear the subsequent version number.